Guideline and Procedure

Upper limb fracture management in the neonate

Sites where Guideline and Procedure applies	All units within HNELHD that care for neonates
This Guideline and Procedure applies to:	
1. Adults	No
2. Children up to 16 years	No
3. Neonates – less than 29 days	Yes
Target audience	All clinicians who provide care to neonates with an upper limb fracture
Description	This guideline describes the minimum care required by all health professionals involved in caring for a neonate with an upper limb fracture.

Go to Procedure

Keywords	Orthopaedics, ortho, neonates, neonatal upper limb fractures, fractured humerus, fractured clavicle
Document registration number	HNELHD GandP 21_17
Replaces existing document?	Yes, HNELHD GandP 17_15 Version One from 20 July 2017

Related Legislation, Australian Standard, NSW Ministry of Health Policy Directive or Guideline, National Safety and Quality Health Service Standard (NSQHSS) and/or other, HNE Health Document, Professional Guideline, Code of Practice or Ethics::

NSW Health GL2016_010 Infants and Children: Acute Management of the Unsettled and Crying Infant
NSW Health Policy Directive 2020_020 Incident Management
NSW Health Policy Directive 2017_032 Clinical Procedure Safety
HNELHD Clinical Procedure Safety (Levels 1, 2 and 3) PD2017_032:PCP 2

Guideline and Procedure note	This document reflects what is currently regarded as safe and appropriate practice. The guideline section does not replace the need for the application of clinical judgment in respect to each individual patient but the procedure/s **requires mandatory compliance**. If staff believe that the procedure/s should not apply in a particular clinical situation they must seek advice from their unit manager/delegate and document the variance in the patients' health record.
Position responsible for the Guideline and Procedure and authorised by	Dr Paul Craven, Director – Children, Young People and Families.
Contact person	Rosemary Day, Physiotherapist
Contact details	Rosemary.Day@health.nsw.gov.au
Date authorised	16 July 2021
This document contains advice on therapeutics	No
Issue date	30 July 2021
Review date	30 July 2024

RISK STATEMENT

This Guideline has been developed to standardise and provide direction to staff involved in the provision of care to paediatric inpatients with an upper limb fracture sustained in the obstetric and neonatal period. It is also to ensure the risks of harm to patients/families are identified and managed. Outcomes include:

- High quality, coordinated and safe care of inpatients with an upper limb fracture.
- Reduced complications associated with upper limb fractures including skin breakdown and infection, pain, poor positioning for fracture healing, prevention of secondary complications such as neural damage due to inadequate protection and immobilisation, further bony or joint damage.

These risks can be minimised by:

1. Appropriate immobilisation
2. Education of parents on care
3. Timely follow-up after discharge

Any unplanned event resulting in, or with the potential for adverse outcomes for patients as a result of this procedure must be reported through the Incident Information Management System and managed in accordance with the Ministry of Health Policy Directive: Incident management PD2020_020.

Risk Category*:* *Clinical Care & Patient Safety*

This 2021 update of the guideline has no content changes from the 2018 version.

GUIDELINE

This Guideline does not replace the need for the application of clinical judgment in respect to each individual patient.

This guideline describes the minimum care required by all health professionals involved in caring for a neonate with an upper limb fracture.

An individual assessment must be carried out in order to formulate a plan of care for each patient that involves the family and must be documented in the health care record.

The care of the patient remains the responsibility of the primary care team who will be supported by the Orthopaedic and Physiotherapy teams as requested.

Upper Limb fractures can be sustained either through prenatal manoevures, birth trauma or postnatal trauma. Risk may be increased with a large infant, instrumental delivery and presence of shoulder dystocia.

Appropriate and timely advice and treatment decreases the risk of pain, dysfunction and adverse long term outcomes.

Definitions of upper limb fractures include:

- Fractured humerus
- Fractured clavicle

Exclusions include:

- Fractures resulting from underlying bony conditions (such as Osteogenesis Imperfecta, Osteopenia)
- Congenital bony abnormalities contributing to above mentioned fractures

  These babies should be referred to a paediatric orthopaedic specialist for specialized management.

PROCEDURE

This procedure requires mandatory compliance.

CLINICAL PROCEDURE SAFETY LEVEL

Every clinician involved in the procedure is responsible for ensuring the processes for clinical procedure safety are followed. The following level applies to this procedure (click on the link for more information):
Level 1 procedure

Staff Preparation

It is mandatory for staff to follow relevant: “Five moments of hand hygiene”, infection control, moving safely/safe manual handling, documentation practices and to use HAIDET for patient/carer communication: **H**and hygiene **A**cknowledge, **I**ntroduce, **D**uration, **E**xplanation, **T**hank you or closing comment.

Patient Preparation

It is mandatory to ensure that the parent/legal guardian has received appropriate information to provide informed consent and, that patient identification, correct procedure and correct site process is completed prior to any procedure.

Equipment Requirements

- Alcohol based hand rub
- Tubifast appropriate for infant’s chest size. Usually tubifast small trunk (yellow) is appropriate for most babies. For a large baby, tubifast large trunk (purple) may be required with some modification either sewing to reduce width or using safety pins.
- Parent information sheet

Pre-procedure

STOP and confirm the following before commencing the procedure:

- Patient identification using three core patient identifiers (Name – family and given names, date of birth and Medical Record Number - MRN)
- Procedure verification – procedure + site/side/level, where appropriate, matches consent
- Allergy/adverse reaction check
- Anticipated critical events
- Verbal consent to be obtained, written consent is not mandatory

Procedure Steps

1. **Diagnosis of upper limb fracture**

- Signs and symptoms may include: audible crack at delivery, crepitus on palpation, swelling, bruising, deformity, decreased movement of upper limb, irritable infant when arm moves, and/or shortening of limb or affected shoulder lower.
- Differential diagnosis: brachial plexus injury
- Complications: Radial nerve palsy can occur with a fracture at the junction of the middle and distal thirds of the shaft of humerus. There will be loss of finger metacarpophalangeal (MCP) extension and loss of wrist extension.
- Medical team to request X-ray of chest and upper limb bilaterally to confirm diagnosis.
- X-ray and baby reviewed by appropriate medical specialist i.e. GP, paediatrician, neonatologist or orthopaedic specialist (N.B. JHH contact paediatric orthopaedic specialist)
- Referral to Physiotherapist to fit tubifast sling and provide education.

2. Treatment

- Assessment of pain and consideration for appropriate pain relief if required e.g. sucrose, breastmilk
- Assessment of active movement of upper limb and skin integrity
- Goal: Immobilisation of the upper limb to support healing and minimise pain.
- Position: The upper limb can be supported against the body with elbow in 90 degrees flexion and shoulder in internal rotation so the arm rests against the chest wall.
- Equipment:
    - Tubifast stocking appropriate for the infant's trunk size with length long enough to double over. Provide a second tubifast so parents can wash and change at home.
    - Alternatives for immobilisation: infant's singlet (very fitted) folded up and pinned to support the arm or commercial neonatal slings.
- Application:
    - Apply the tubifast by bringing it up over the legs to the chest to avoid excessive movement of upper limb.
    - 1 layer between the chest and the arm to avoid skin on skin which can lead to skin breakdown. Ensure the tubifast is up to the armpit.
    - Fold up the tubifast from bottom so 2nd layer is over the limb and shoulder on the affected side to support the upper limb and under the arm pit on the unaffected side.
    - Ensure that the tubifast is not too tight.



- Education to parents: on dressing, bathing, handling, skin care/prevention of pressure injury and positioning- provide parent handout (Appendix 1) and pressure care factsheet

3. Follow-up

- Initially the tubifast should be removed daily by parent/carer to check skin integrity, movement and circulation. Infant can be sponge bathed daily with full bath every few days.
- As pain reduces, the tubifast can be taken off for short periods when awake to allow the infant to move the arm within pain limitation.
- Immobilisation is recommended for 2 weeks.
- Review around 1 week by physiotherapist, nurse/midwife or GP to ensure no issues with skin integrity, movement or pain.
- Review at 2 weeks. For uncomplicated clavicle fracture, follow-up with GP is appropriate. For humerus fractures, follow-up with paediatric orthopaedic specialist or paediatrician. Repeat X-ray may be requested at medical officer's clinical discretion.

Post procedure

- Document procedure in patient's health care record including provision of handouts and pressure care education.
- Provide advice for clinical handover to staff caring for patient.
- Arrange post procedure tests where clinically relevant.

IMPLEMENTATION AND MONITORING COMPLIANCE

Distribution of guideline across HNE Health targeting Paediatricians, Physiotherapists, MUM of Maternity Services, NUM of Special Care Nursery, relevant medical officers.

Compliance will be monitored by identification of complications as recorded by IMS+.

CONSULTATION WITH KEY STAKEHOLDERS

2017

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2021

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APPENDICES

"Caring For Your Baby with a Fractured Clavicle or Humerus" parent information sheet

REFERENCES

Sherr-Lurie N, Bialik GM, Ganel A, Schindler A, Givon U (2011). Fractures of the humerus in the neonatal period. Isr Med Assoc J. 2011 Jun;13(6):363-5.

Hsu TY, Hung FC, Lu YJ, Ou CY, Roan CJ, Kung FT, Changchien CC, Chang SY (2002). Neonatal clavicular fracture: clinical analysis of incidence, predisposing factors, diagnosis, and outcome. Am J Perinatol. 2002 Jan;19(1):17-21.

FEEDBACK

Any feedback on this document should be sent to the Contact Officer listed on the front page.

Clinical Audit Tool

National Standard 1: 1.7(b): The health service organisation uses a risk management approach to monitor and take action to improve the adherence to policies, procedures and protocols.

Criterion no.	Criterion	Exceptions	Definition of terms and/or general guidance	Data source	Frequency	Position Responsible
1	Recording of complications e.g. skin break down	None	Skin breakdown occurs from excessive moisture with skin to skin contact	IMS+	Annual	Head of Physiotherapy Department JHCH, Patient Safety Officer
2	Appropriate follow-up after discharge for complex fractures	None	Complex fractures include displaced clavicle fractures and humerus fractures	IPM	Annual	Head of Physiotherapy Department JHCH

Reference: *Electronic audit tool - National Institute for Health and Clinical Excellence (NICE): http://www.nice.org.uk/about/what-we-do/into-practice/audit-and-service-improvement/audit-tools*

Positioning

- Carry your baby with the injured side on the outside supported by your hands. Don't let your baby's arm dangle or go behind their body.
- Wrap both your baby's arms across the chest for sleeping.
- Alternate the head position for sleep to avoid developing any head preference or head moulding.
- Remove the body stocking for a short time when awake to allow some time for your baby to move their hand and elbow if they choose to do so. They may even lift their own arm above their head.
- Place your baby on their good side with a small rolled towel behind the back.
- Tummy time may be uncomfortable but can be started after 2 weeks.

Things to look out for

- Check the skin under the arm is not red or broken down.
- Healing of a fracture in a newborn baby takes only about 2 weeks. You may see or feel a small lump over the fracture site. This is the normal and shows the bone is healing.

See you doctor if:

- The pain does not seem to be getting better or is getting worse.
- Your baby is still not moving his/ her arm after 2 weeks. Not moving may be a sign of damage to the nerves in the arm.
- Any skin breakdown under the arm.

Follow-up

Physiotherapist: _____
Appointment: _____
Phone: _____

HNEkidshealth
www.hnekidshealth.nsw.gov.au

Approved: July 2021
Review Date: July 2024

Caring For Your Baby with a Fractured Clavicle or Humerus

HNEkidshealth Children, Young People & Families
Health NSW Hunter New England Local Health District
HNEkidshealth Children, Young People & Families
Health NSW Hunter New England Local Health District

Introduction

Your baby has a broken (fractured) collarbone (clavicle) or upper arm bone (humerus). An X-ray can tell us where the break is. A clavicle fracture occurs approximately 1 in every 700 births. A humerus fracture occurs approximately 1 in every 1800 births. Fractures heal quickly in babies and new bone can be seen by 2 weeks after the fracture occurs. Initially, your baby may be uncomfortable and not move their arm. They will usually start moving their arm again within 2 weeks.

Immobilization

Your baby may require the arm to be kept still for the first 2 weeks to help with pain and allow healing.

Use a special tube-like body stocking ("tubi-net") around the injured arm and body to hold the arm at the front against the chest.

- Put this on from the feet end.
- One layer under the arm pit (to stop skin on skin which can cause rubbing and redness).
- The arm should sit across the body. The elbow should not drop down the side of the body.
- Fold the stocking up from the bottom over the arm and shoulder on the side of the break.

- The stocking can be used less often as your baby becomes more comfortable when you pick them up.

Dressing & Bathing

- Use clothes with zips or press studs to make it easier to dress your baby. Avoid clothes that need to be put over the baby's head.
- Dress the injured arm first.
- When undressing, remove the clothes from the good side first so you can slide the clothes off the injured side more easily.
- You only need to bath your baby every few days during the first 2 weeks.
- When bathing your baby hold around the good arm pit.
- Carefully lift the injured arm to wash under the arm pit and in the skin folds of the neck.
- Ensure the skin in the armpit is dry.
- Check the skin under the arm is not red or broken down.